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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/343,092	06/30/1999	HIDEO SAMURA	50059-048	7482

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WASHINGTON, DC 20005-3096

EXAMINER
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DICKENS, CHARLENE

ART UNIT	PAPER NUMBER
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2855

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/343,092

Applicant(s)

SAMURA, HIDEO

Examiner

Ex. Dickens

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,11 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. in view of Sugitani et al. Kitahara et al. teaches a head for ink-jet printer comprising: a substrate 42 on which a plurality of ink nozzles 54 and a plurality of ink passages 56 each communicating separately to each of the ink nozzles; an inorganic substrate 44 which is joined with said substrate and is provided with ink chambers 46 each communicating separately to each of the ink passages, and a piezoelectric element of ferroelectric substance (col. 9, lines 5, 6) for changing separately a capacity of each of the ink chambers to jet an ink from said ink nozzles through said ink chambers; wherein said ink passages are fine as compared with said ink chambers and said ink nozzles are fine as compared with said ink passages (Fig. 1). However, Kitahara et al. does not teach specifically an etched silicon substrate and a pitch of the ink nozzles is approximately  $20\mu\text{m}$  (claims 1, 12). Sugitani et al. teaches a substrate can be a silicon substrate (col. 3, lines 22, 23) and can be processed finely using a plasma etching method

(col. 3, line 27) for the purpose of providing a small sized liquid-jetting head having compacted multi-orifices (col. 1, lines 61-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a substrate can be a silicon substrate and can be processed finely using a plasma etching method in Kitahara et al. as taught by Sugitani et al. for the purpose of providing a small sized liquid-jetting head having compacted multi-orifices (col. 1, lines 61-63). Next, a pitch of the ink nozzles is approximately  $20\mu\text{m}$  is claimed. This serves the purpose to better facilitate ink flow. Kitahara et al. does not specifically teach a pitch of  $20\mu\text{m}$ . Nevertheless, Kitahara et al. does provide tapering of the nozzles to better facilitate ink flow (col. 6, lines 15-21). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a pitch of the ink nozzles is approximately  $20\mu\text{m}$  in the modified Kitahara et al. for the purpose to better facilitate ink flow.

Claim 4: Kitahara et al. teaches said ink nozzles have tapered configurations (Figs. 1, 4, 5).

Claims 5, 6: Kitahara et al. teaches said silicon substrate has a construction in which plural silicon substrates are laminated and wherein said ink nozzles and said ink passages are communicated by laminating the silicon substrate in which said ink nozzles are processed and the silicon substrate in which said

ink passages are processed (col. 6, lines 50-68).

Claim 7: Kitahara et al. teaches an ink tank for storing ink supplied to said ink chambers of said printer head (col. 5, line 46, col. 6, line 8).

Claim 11: Kitahara et al. teaches said ink passages have a cross sectional area less than a cross-sectional area of said ink chambers, and wherein said ink nozzles have a cross-sectional area less than a cross-sectional area of said ink passages (Fig. 1).

3. Applicant's arguments filed 9/2/03 have been fully considered but they are not persuasive. Applicant argues Sugitani et al.'s recitation of "silicon, glass, ceramics, plastics, and metals" is nothing more than a parallel recitation intended to cove practically every material under the <sup>sun</sup>~~sun~~ and that Sugitani et al. do not suggest any ida of particularly selecting a silicon substrate from among the possible listed materials. The Examiner disagrees with this argument. The mere fact Sugitani et al. lists several types of materials, does not preclude the fact that Sugitani et al. is suggestive of the claimed "silicon substrate". Thus, this argument is not found to be persuasive. Next applicant goes on to argue the Examiner is required to identify a source in the applied prior art not only for claim limitation, but also for the requisite *motivation* to modify an applied reference or to combine applied references with

a reasonable expectation of successfully achieving a specific benefit. First of all, the Examiner asserts, all 35 U.S.C. 103 rejections must provide *rationale* to modify an applied reference. The Examiner did provide a rationale for the modification. Next, the Examiner purports it is not necessary that the references actually suggest, expressly or in so many word, the changes or improvements that applicant had made. The test for combining references is what the references as a whole would have suggested to one of ordinary skill in the art. In re Sheckler, 168 USPQ 716 (CCPA 1971); In re McLaughlin 170 USPQ 209 (CCPA 1971); In re Young 159 USPQ 725 (CCPA 1968). Since the Examiner has provided a rationale for the combination, the rejection is deemed to be proper. Applicant additionally argue, that the "etching" described in Sugitani et al. is a *chemical etching*, not a plasma etching. Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than method of manufacturing. Apparatus claims cover what a device is, not how it is made. Applicant goes on to argue that neither Sugitani et al. nor Kitahara et al. teach or suggest, singly or in combination, formation of ink nozzle and ink path by lamination of plural silicon substrates. The Examiner disagrees with this argument. It should be noted the rejection given above is Kitahara et al. in view of Sugitani et al. It appears the applicant is arguing the rejection as Sugitani et al. in view of

Kitahara et al. Arguendo, the Examiner will explain the Office position with regards to a rejection based on Kitahara et al. in view of Sugitani et al. The Examiner is not convinced by this argument either. Kitahara et al. clearly states "the material used for the plates...of the flow path 42 is not particularly limited" (col. 6, lines 10, 11). Kitahara et al. is also clearly suggestive of a formation of ink nozzle and ink path by lamination of plural substrates. Lamination is form of the word laminate; and laminate is defined as "to compress or beat into a thin plate or sheet. To separate into thin layers." by Webster's II New Riverside University Dictionary. It is known by one of ordinary skill in the ink jet printing art the substrates within the printer are thin layers. Thus, again Kitahara et al. is suggestive of a formation of ink nozzle and ink path by lamination of plural substrates. Sugitani et al. is used to teach silicon substrate within an ink jet printer. Since Kitahara et al. is suggestive that one is not limited to the type of material used for the substrates and Sugitani et al. is suggestive of silicon as the material used for substrates, the combination is proper. Again, this line of arguing is not persuasive. Applicant argues Kitahara et al. does not teach or suggest the claimed limitation of "a pitch of the ink nozzles is approximately 20  $\mu\text{m}$ ". The Examiner does not agree with this argument either. Kitahara et al. is suggestive of tapered

nozzles. Also, the claimed limitation does not provide an  
^ expected result. Thus, the teachings provided by Kitahara et al.  
is suggestive of the claimed limitation. The applicant argues  
the Examiner's motivation for the aforementioned rejection.  
Specifically, applicant states Kitahara et al. has tapered  
nozzles for the purpose of providing a check valve for inhibiting  
the ink from flowing in the reverse direction. The mere fact the  
Examiner did not quote a rationale from Kitahara et al. itself,  
does not preclude the fact that the rationale is not proper. It  
is noted by the Examiner that better flow facilitation is met  
when there is a check valve for inhibiting the ink from flowing  
in the reverse direction. Next, the Examiner purports it is not  
necessary that the references actually suggest, expressly or in  
so many word, the changes or improvements that applicant had  
made. The test for combining references is what the references  
as a whole would have suggested to one of ordinary skill in the  
art. In re Sheckler, 168 USPQ 716 (CCPA 1971); In re McLaughlin  
170 USPQ 209 (CCPA 1971); In re Young 159 USPQ 725 (CCPA 1968).  
Since the Examiner has provided a rationale for the combination,  
the rejection is deemed to be proper. Lastly about this  
argument, the Examiner did not take Official Notice. As stated  
above, Kitahara et al. is suggestive of the claimed limitation.  
Accordingly, all of the arguments are not deemed to be  
persuasive. Hence, the modified Kitahara et al. clearly teaches



and/or suggests the claimed limitations.

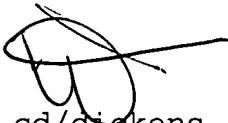
4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dickens or the supervisor Edward Lefkowitz whose telephone numbers are (703) 305-7047 or (703) 305-4816, respectively. Any inquiry of a general nature or relating to the status of this


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application should be directed to the receptionist whose  
telephone number is (703) 308-0956. The fax numbers are (703)  
305-3431 and (703) 305-3432.



cd/dickens  
December 1, 2003



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